

NEWSLINE

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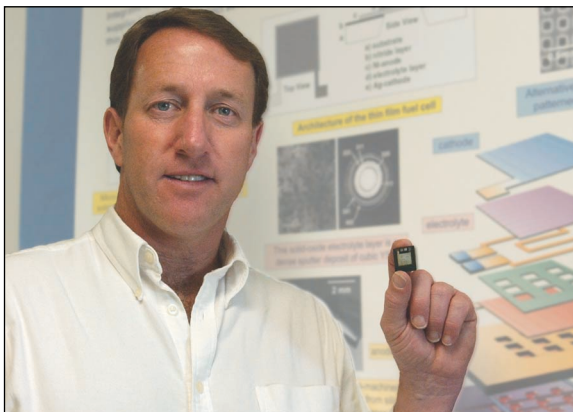
New thin-film fuel cell packs powerful boost for consumer electronics

By Sheri Byrd

NEWSLINE STAFF WRITER

The LLNL Center for Microtechnology Engineering has developed and demonstrated a laboratory prototype miniature thin-film fuel cell power source, which provides portable electrical power for a range of consumer electronics. With the LLNL fuel cell, a typical cell phone battery

See **TECHNOLOGY**, page 8



JULIE KORHUMMEL/NEWSLINE

Jeff Morse, showing a sample of a fuel cell stack for the miniature thin-film fuel cell power source.

Lab earns overall grade of outstanding for science, management, operations

By Sheri Byrd

NEWSLINE STAFF WRITER

For the first time ever, the Laboratory has achieved an overall rating of “outstanding,” as assessed by the National Nuclear Security Administration (NNSA). The annual assessment, covering the period Oct. 1, 2000, to Sept. 30, 2001, includes appraisals of the Lab’s performance in three areas — institutional Laboratory management, science and technology (S&T) and operations and administration (O&A).

This comprehensive evaluation, along with annually negotiated performance standards, is defined in Appendix F of the UC contract with DOE.

Appendix F covers the annually required assessment of the Lab in these three areas. Performance expectations are negotiated annually between NNSA, UC and LLNL. The Lab can score up to 1,000 points under Appendix F: 100 for Lab management, 500 for S&T, and 400 for O&A. For fiscal year 2001, LLNL scored 91.1 points or 91.1 percent in Lab management; 469 or 93.8 percent in S&T, and 362 or 90.5 percent in O&A — for an overall rating of 922 points or 92.2 percent. A score over 90 points qualifies the Lab for an “outstanding” rating.

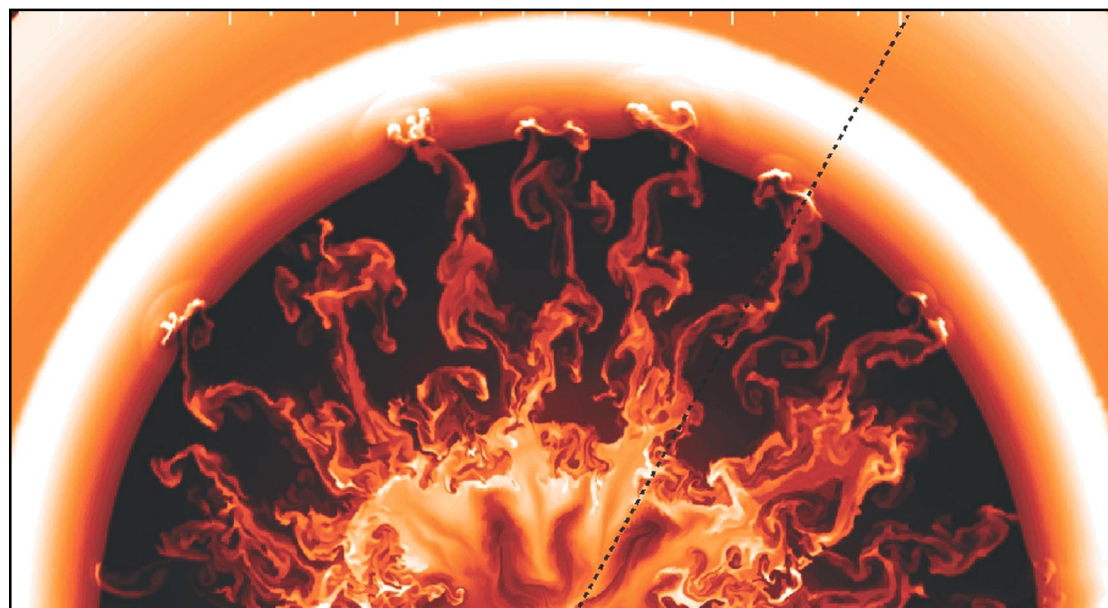
The performance-based management (PBM)

Employee survey recommendations at ‘400’ meeting

Recommendations from the employee survey, “Assessing the Workplace,” will be presented at a “400” meeting Thursday, Feb. 21, at 11 a.m. in the Bldg. 123 auditorium.

Deputy Director Jeff Wadsworth and Administration AD Jan Tulk will present the conclusions of the various Survey Action Teams and their recommendations.

Recommendations will be broken down into several areas, among them employee development, work/life balance, performance management and total rewards.



MAX-PLANCK-INSTITUT FUER ASTROPHYSIK

Large lasers are recreating conditions found in supernovae and other astronomical phenomena.

Lasers point way to astronomical phenomena

By Anne M. Stark

NEWSLINE STAFF WRITER

BOSTON, Mass. — Large lasers and Z-pinch generators in laboratories are recreating conditions relevant to astrophysical phenomena of the universe such as supernovae, black holes, molecular clouds like the Eagle Nebula, and the creation of new planets.

Laboratory physicist Bruce Remington will discuss this and other findings this weekend in a presentation entitled: “Laboratory Astrophysics Using High-Power Lasers,” during the “Visualizing and Looking Beyond Earth” track of the annual meeting of the American Association for the

See **LASERS**, page 5

See **RATINGS**, page 8

Here’s your chance to join the parade in honor of Lab’s 50th

All the world loves a parade, or at least that’s how we feel in the Tri-Valley. In the next several months, there will be parades aplenty in communities such as Dublin, Livermore, Pleasanton and Danville — and the Lab with be there.

But we need your help.

In honor of its 50th anniversary, the Laboratory will put together a special float high-

lighting science education and marking five decades of cutting edge technology — not to mention enough pocket protectors and Birkenstocks to comfortably girdle the globe.

The float will be unveiled Saturday, March 16, in Dublin, in honor of St. Patrick’s Day. Other parades include the Livermore Rodeo on June 8; the Alameda County Fair kickoff in Pleasanton, on June

22; and the Fourth of July procession in Danville.

Volunteers are needed to help build this special float. You supply the elbow grease, we’ll supply the tools and instruction. No previous construction experience is required — just an ability

See **PARADE**, page 5



1958: Verification, arms control

— Page 3



Afghanistan from one who knows

— Page 4



Marburger on science policy

— Page 5



LAB COMMUNITY NEWS

Weekly Calendar

Technical Meeting Calendar, page 4

Monday
18

The **Laboratory is closed today** in honor of President's Day.

Tuesday
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A final brown bag lunch dedicated to preparing for a spring forum on **framing a "model workplace"** for women scientists and engineers will be held noon-1:30 p.m. in Bldg. 319, room 205. This brown bag session is in preparation for a forum planned for the spring congressional recess in Albuquerque, N.M. Contact: Dorothy Bishop, 2-2267.

Wednesday
20

The Macintosh Technical Seminar Series will feature a presentation by **Macworld magazine Mac 911 columnist, Chris Breen**, at 1:30 p.m. in the Bldg. 543 auditorium (please note the time change). Breen will bring a collection of his favorite Mac tips and tricks for both Mac OS 9 and OS X, and offer advice on troubleshooting and Mac maintenance. Contact: Duane Straub, 2-9774.

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A representative from **Fidelity Investments** will meet with employees Feb. 20-21 and March 5-6. Fidelity Investments are available to UC's 403(b) participants in addition to the UC-managed investment funds. To set up an appointment, call Fidelity at 1-800-642-7131. Be sure to specify you are an LLNL employee.

Friday
22

Today is the deadline to purchase tickets for the Chinese American Network group's annual **Chinese New Year banquet lunch**.

The network group will celebrate the Year of the Horse on Thursday, Feb. 28, 11:30 a.m. to 1 p.m. at the Willow Tree Restaurant in Dublin. Tickets are \$15 per person. Tickets are available from Eric Chow (2-0552 or <mailto:ericchow6@llnl.gov>).



Mark your calendars, er, PDAs, for two upcoming classes: **"Palm Time Management and Productivity"** (EC3000) is

scheduled for Feb 28, 8 a.m.-4:30 p.m. in Bldg. 543 auditorium. You will learn how to use the Palm and every program that comes on it. Cost is \$100-\$225. **"Advanced Palm Solutions,"** (EC3000), will be offered on March 1, also in the Bldg. 543 auditorium. The cost is \$200-\$250. Contact: SND Training Center, 3-2736 or snd-training@llnl.gov.

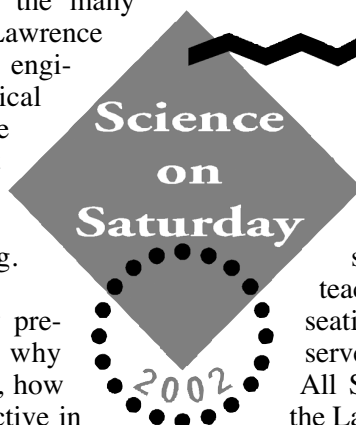
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The Eldercare Support Group, sponsored by Health Services, is hosting a talk by Kit Batina on **"How to Help Your Parents Protect Their Assets During a Nursing Home Stay."** This talk will be offered noon-1 p.m. on Wednesday, Feb. 27, at the Visitors Center auditorium. Family members are welcome. Badges are not required. Seating is limited to the first 25-30 people. Contact Marnette Yeager, 2-1217.

Saturday talk brings robots to life

Robots come in many different shapes, sizes and colors, and can perform a wide variety of tasks. Come learn more about the many robots we use everyday when Lawrence Livermore National Laboratory engineer Mark Perez and mechanical designer Kathy Fritz, and science teacher Jim Bock present "Robots — Look Out! We're Surrounded," on Saturday, Feb. 16, at 9:30 a.m. in the Lab's Bldg. 123 auditorium.

In this Science on Saturday presentation, students will learn why robotics technology is important, how robots help us to be more productive in our everyday lives and how LLNL is using robots for its state-of-the-art work. The program will also include a demonstration of a small-scale robotic arm as well as videos showing robotic technology in action in the Lab.



LLNL's Science on Saturday program is a five-week series of free 90-minute talks geared toward middle and senior high school students. The free lectures, which cover topics ranging from the study of volcanoes to research on how galaxies are formed, will be offered every Saturday through March 2, from 9:30-11:15 a.m. All of the talks are in the Bldg. 123 auditorium and are open to students, their parents or guardians, and teachers. Registration is at the door and seating is available on a first-come, first-served basis, with priority given to students. All Science on Saturday visitors must enter the Laboratory through the southwest entrance on East Avenue.

For more information, check the Website at <http://education.llnl.gov/sos> or e-mail the Lab's Science and Technology Education Program at education@llnl.gov.

Black History month celebration continues

In celebration of Black History Month, LLNL and Sandia employees can enjoy luncheons, video tapes with discussions, speakers, as well as entertainment.

The schedule of events is as follows:

- Feb. 15: Social lunch, LLNL South Café, noon-1 p.m.
- Feb. 18: Videotape, "Ships of Slaves: The Middle Passage," LLNL Bldg. 571, room 2301, noon-1 p.m. Produced by Steven Spielberg's DreamWorks.
- Feb. 19: Videotape, "The Night Tulsa Burned," Sandia Bldg. 911, room 103, refreshments served, noon-1 p.m.
- Feb. 20: Speaker Bebe Moore Campbell, "Issues of Healing and Intolerance," LLNL Bldg. 543 auditorium, 11 a.m.-noon.
- Feb. 20, 27: "Who Wants to Be a Millionaire?" Sandia Bldg. 904 auditorium, noon-1 p.m. Six to eight volunteers will be selected to participate.
- Feb. 21: Music & display, "African-American History — From Before Slavery to Present Times," Asale Kimbaada, Sandia Bldg. 904 auditorium, refreshments served, noon-1 p.m. Rhonda Ferguson and Ed Allen will entertain through their music.
- Feb. 22: Health information session, "Health Concerns for African-Americans," Kerwin Falls, LLNL, Bldg. 361 auditorium, noon-1 p.m.
- Feb. 25, 26: Video tape, "John Henry Clark Expedition," parts 1 & 2, LLNL Bldg. 571, room 2301, noon-1 p.m.
- Feb. 28: "Soul Smacking Productions," Teirrah McNair, Sandia Bldg. 904 auditorium, refreshments served, noon-1 p.m.

Talk addresses intolerance

Noted author Bebe Moore Campbell will speak to Lab employees on issues of healing and intolerance on Wednesday, 11 a.m. to noon in the bldg. 543 auditorium. Her talk is part of the Diversity Speaker Series and is co-sponsored by the Association of Black Laboratory Employees and the LLNL Women's Association in celebration of February as Black History Month.



Bebe Moore Campbell

The Washington Post called Campbell "one of the most important African American writers of this century." She is a recipient of the National Endowment for the Arts literature grant and is the author of two *New York Times* bestsellers, "Brothers and Sisters," and the more recent "Singing in the Comeback Choir."

Campbell's other works include the novel, "Your Blues Ain't Like Mine," for which she won a NAACP Image Award. Campbell's most recent novel is "What You Owe Me."

A book signing will follow her talk. Books are available at the LLESA office in Bldg. 415.

IN MEMORIAM

Kathryn Frances Grupe

A memorial service will be held Monday, Feb. 18, for Lab retiree Kathryn Frances Grupe, at 12:30 p.m. at the Wilson Family Funeral Chapel in Livermore. Grupe died Jan. 15, at her home in Livermore.

Grupe was a longtime area resident. She worked at the Lab from 1970-1990 as a technical editor and group leader.

She will be laid to rest at St. Michael's Cemetery, Livermore.

Contributions may be made to the Alzheimer's Association - Northern Calif Chapter, 2065 W. El Camino Real, Suite C, Mountain View 94040; or UCSF Foundation (Asthma), University Development, 44 Montgomery, Suite 220, San Francisco, 94104.

Newsline

Newsline is published weekly by the Internal Communications Department, Public Affairs Office, Lawrence Livermore National Laboratory (LLNL), for Laboratory employees and retirees.

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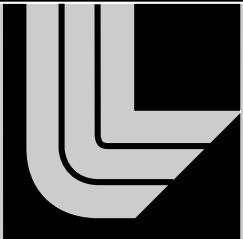
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1952 – 2002

MAKING HISTORY, MAKING A DIFFERENCE



Providing technical support for arms control

This is an ongoing feature highlighting the Lab’s 50-year history. This week we take a look at the year 1958.

In July and August 1958, E.O. Lawrence and Harold Brown attended the Conference of Experts held in Geneva to examine how a comprehensive ban on nuclear testing could be verified. Their participation signaled the beginning of the Laboratory’s long history of providing technical support for arms control negotiations and implementation. As his final service to the nation, Lawrence was one of the three U.S. representatives at the conference, where he suffered an acute attack of colitis leading to his death. Brown was a member of the delegation’s technical advisory group. Many Livermore scientists would follow in their footsteps by contributing their expertise to the negotiation of nuclear arms reduction and nuclear test ban treaties.

Subsequently, President Eisenhower announced U.S. willingness to suspend nuclear weapons testing and to begin negotiations on a comprehensive test ban. Concurrently, a feasible verification regime was to be developed. Research activities on monitoring nuclear explosions ensued at the Laboratory. What evolved was a worldwide network of seismic stations that has been the primary source of data for the seismic community for 40 years.

Moratorium
1958 nuclear weapons



ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY

Khrushchev delivering a speech during the reception in the Kremlin’s Georgian Hall following the formal signing of the Limited Test Ban Treaty on August 5, 1963.

Around the world

- Quemoy–Matsu crisis
- Moratorium on nuclear weapons tests begins
- First U.S. missiles deployed in Europe (Thor IRBMs in UK)
- Prince Charles becomes the Prince of Wales

Around the nation

- First U.S. satellite launched
- First U.S. ICBM test (Atlas)
- NASA established
- Charge card American Express debuts

- The National Defense Education Act places heavy emphasis on math, science, and language education

Around the Lab

- Herbert F. York is Lab’s director
- Death of E. O. Lawrence
- The Lab is renamed Lawrence Radiation Laboratory
- Lab population grows to about 3,000

in other
NEWS

Significant
events around
the world, the
nation and at
the Lab.

See the Timeline: <http://www.llnl.gov/timeline/> See anniversary stories: http://www-r.llnl.gov/50th_anniversary/history.htm



Send Us Your ‘Lab Life’ Story

Stories are pouring in for the “50 Years of Stories” publication, in honor of the Lab’s 50th anniversary. After looking at the stories received and after interviewing many people, we’re discovering that there are some patterns emerging. We’d like to hear more stories about:

1. Meeting your significant other at the Lab.
2. Family stories. Growing up in a Lab family, for instance.
3. Practical jokes
4. Ingenuity on the job
5. “Cooler” stories
6. Work partnerships formed with extraordinary people
7. Work travel stories (other than Nevada Test Site and the Pacific testing)
8. Strange discoveries
9. Superhuman efforts to get the job done

Deadline extended:
March 1

Send your stories to Laurie Powers, L-664, powers12@llnl.gov. You may also submit stories on the Web at http://www.llnl.gov/50th_anniv/story.htm.

Questions?
Call Laurie Powers,
(925) 423-9868

Now is your chance to
sound off on ‘Labspeak’

Our fundamental principles. Our ability to grow the Lab. Let’s talk offline. The double-click of that. Going green.

Face it, when it comes to speaking to colleagues, Laboratory employees have a language all their own. Some of it makes sense — once you’ve worked here for a few years. At other times, this Labspeak seems like an exercise in redundancy, not to mention confusion. For example, how many of you out there have used the phrase NIF facility?

Here’s your chance to sound off. In honor of the Lab’s 50th anniversary, we’re collecting a list of phrases and other Labspeak you’ll only find within the confines of the gates. They can be phrases that are funny, odd, or simply make sense to no one — and yet you find yourself using them every day.

We’ll print your suggestions in an upcoming issue of *Newsline*.

Send your suggestions to Newsline, L-797 or e-mail them to newsonline@llnl.gov.



NEWS YOU CAN USE

Deadline for submitting LDRD Strategic Initiative proposals is Feb. 22

Friday, Feb. 22, is the deadline for submitting proposals for the FY03 Laboratory Directed Research and Development (LDRD) Strategic Initiative (SI) competition. Proposals for SIs should be submitted to the Laboratory Science and Technology Office (LSTO).

For currently funded SIs, full proposals are due. Full proposals should include a detailed discussion of FY02 accomplishments and proposed goals and milestones for FY03. For new SI proposals, a preproposal (one- or two-page white paper) should be submitted through the principal investigator's directorate office. For more information, see the LDRD Website: <http://ldrd.llnl.gov/ProposalSubmittal> or contact the LSTO at 3-2810.

The LDRD SI competition is open to all Laboratory programmatic, scientific, engineering, and technical staff. An SI proposal should focus on innovative R&D activities to develop new directions for existing programs, on new concept demonstrations, and/or to extend the Laboratory's science and technology foundations. More importantly, an SI proposal must be responsive to and strongly aligned with the Laboratory's strategic directions and long-term vision, as articulated by at least one of the Laboratory Strategic Councils: National Security, Energy and Environmental Systems, Biosciences and Biotechnology, and Strategic Science and Technology.

Inside Afghanistan, from one who knows

The Safety, Security & Environmental Protection directorate will present a talk by Bonita Chamberlin, international businesswoman, on "Inside Afghanistan...From One Who Knows," Thursday, Feb. 21, 10:30 a.m.-noon in the Bldg. 543 auditorium.

Chamberlin has spent the past 24 years, under four regimes — the monarchy, the Soviets, the civil war and the Taliban — working in Afghanistan. From 1976-78, she interacted with the Afghan government and multinational corporations, especially SunMaid and Lummus, to facilitate business and economic development. Chamberlin designed and executed profit and income-generating projects primarily through natural resource development and agriculture.

In the mid-'80s, she returned and developed a relationship with the Mujahideen during the Soviet conflict, principally with Ahmed Shah Massoud. She crossed the Hindu Kush mountains from Pakistan with the Mujahideen, who were bringing in arms, food and needed supplies. Under primitive conditions, she assisted the local tribesmen of Panjsher, Badakhshan, Nuristan and Sorobi in the mining, marketing and sale of gemstones and minerals.

Although Afghanistan has historically been known for its lapis lazuli deposits, significant amounts of tourmaline, kunzite,



Bonita Chamberlin

aquamarine, emerald, ruby, sapphire, spinel and amethyst have also emerged from the embattled nation. Much of the wealth was unknown until the Soviets began bombing and the bombs exposed the crystals. The gems were the only source of revenue available for the tribesmen, since all other agriculture and animal husbandry were destroyed in the war.

As a result of her extensive work in Afghanistan, Chamberlin has intimate knowledge of the country, particularly the northeastern part that has been held by the Northern Alliance. Her research has also taken her to the mineral deposits of central Afghanistan, the Kundar Urgan, Helmand, Tirpul and Karakum basins.

In 1995 she co-authored a book, "Gemstones of Afghanistan," which documents the coordinates of different gems and minerals, including solid combustible minerals, metallic and non-metallic minerals, rare metals, radioactive elements, precious metals and gemstones, salt and industrial minerals.

Join Chamberlin to hear the history of this war-ravaged country and stories of its people, land and resources, pre-Soviet to the present. She will take audience questions following the talk.

For more information, contact Rick Blake, 2-9910.

Technical Meeting Calendar

Friday
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INSTITUTE FOR GEOPHYSICS & PLANETARY PHYSICS

"How does the SED of the Universe Evolve with Time: Pan-Chromatic Models of

Galaxy Formation," by Rachel Somerville, University of Michigan. Noon, Bldg. 319, room 205 (badge required). Contacts: Adam Stanford, 3-6013, or Josie Morgado, 4-5201.

MATERIALS SCIENCE & TECHNOLOGY

"Challenges in Demonstrating the Waste Package Performance Requirements at Yucca Mountain," by Dan McCright, 3:30 p.m., Bldg. 235, room 1090 (uncleared area). Coffee and cookies will be served at 3:20 p.m. Foreign nationals may attend if an appropriate security plan is on file. Contact: Thomas E. Felter, 2-8012.

Tuesday
19

CHEMISTRY & MATERIALS SCIENCE

"Using XPS to Investigate Fiber-Matrix Chemical Interactions in Carbon-fiber-reinforced Composites," by Cara Weitzsacker, Candescent Technologies Corp. 10 a.m., Bldg. 235, gold room (uncleared area).

Contacts: Art Nelson, 2-6488, or Roberta Marino, 3-7865.

PHYSICS & ADVANCED TECHNOLOGIES

"A Measurement of the B0 Oscillation Frequency Using Full-Reconstructed Hadronic Decays at BaBar," by Benjamin Brau, Stanford University. 1:30, p.m. Bldg. 211, room 227 (badge required). Contacts: Doug Wright, 3-2347, or Pat Smith, 2-0920.

PHYSICS & ADVANCED TECHNOLOGIES

"Revolutionizing the Control of Light with MOEMS (MicroOpto-Electro-Mechanical Systems)," by Scot Olivier, LLNL. 2 p.m., Bldg. 219, room 163 (badge required). Contact: Leslee J. Markham, 3-9699.

Wednesday
20

SYSTEMS & NETWORK DEPARTMENT

Macintosh Technical Seminar Series. 1:30 p.m., Bldg. 543 auditorium. A presentation by Macworld magazine Mac 911 columnist, Chris Breen. Breen will bring a collection of his favorite Mac tips and tricks for both Mac OS 9 and OS X, and offer advice on troubleshooting and Mac maintenance. Contact Duane Straub, 2-9774, or mailto:straub1@llnl.gov

Friday
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PHYSICS & ADVANCED TECHNOLOGIES

"Search for CP Violation in Tau lepton Decays," by Yurri Maravin, Southern Methodist

University, Texas. 2:30 p.m. Bldg. 211, room 227 (badge required). Contacts: Doug Wright, 3-2347, or Pat Smith, 2-0920.

INSTITUTE FOR GEOPHYSICS & PLANETARY PHYSICS

"The Formation and Evolution of Planetary Systems: Placing Our Solar System in Context with SIRT," by Michael Meyer, University of Arizona. Noon, Bldg. 319, room 205. Contacts: Adam Stanford, 3-6013, or Josie Morgado, 4-5201.

The deadline for the next Technical Meeting Calendar is noon, Wednesday.

Send your input to tmc-submit@llnl.gov. For information on electronic mail or the newsgroup llnl.meeting, contact the registrar at registrar@llnl.gov.

NEWS OF NOTE



Engineering to host local school students as part of National Engineering Week

The Engineering directorate joins the National Society of Professional Engineers in celebrating the annual Engineers Week, Feb. 17 – 23.

As part of the celebration, Engineering will host hundreds of locally invited school classes for the Engineering Day activities, Friday, Feb. 22.

Greg Brown, director of exhibits at the San Jose Tech Museum of Innovation will be speaking to the students on the different kinds of engineering they experience in their everyday lives.

“We will also have plenty of hands-on activities from the ‘The Tech,’ including Roboland in the West Café,” said Carol Gerich, communications manager for Engineering.

In addition, Glenn Mara, associate director for Engineering, will host an open house at his office Feb. 21 from 2-4 p.m.



Science policy for national labs subject of talk

John Marburger, director of the Office of Science and Technology Policy and adviser to the president, will present “Science and Technology Policy for the National Laboratories,” at 3:30 p.m. Wednesday, Feb. 20, in the Bldg. 123 auditorium.

Marburger’s talk is part of the Director’s Distinguished Lecturer Series. Director Bruce Tarter invites all employees to attend.

The Office of Science and Technology Policy (OSTP) provides scientific and technological analysis and judgment for the president with respect to major policies, plans, and programs of the federal government. As the director of OSTP, Marburger co-chairs the President’s Committee of Advisers on Science and Technology (PCAST) and supports the president’s National Science and



John Marburger

Technology Council (NSTC).

Marburger previously served as director of Brookhaven National Laboratory, where he expanded Brookhaven’s emphasis on technology transfer and played a significant role in advancing environmental restoration at that laboratory.

From 1980-94, Marburger served as president of the State University of New York at Stony Brook. While there, he was chair of Gov. Cuomo’s fact-finding panel on the Shoreham

Nuclear Power Plant.

Marburger’s lecture will be broadcast on Lab Channel 2 Thursday, Feb. 28 at 10 a.m., noon, 2, 4, and 8 p.m., and on Friday, March 1 at 4 a.m.

LASERS

Continued from page 1

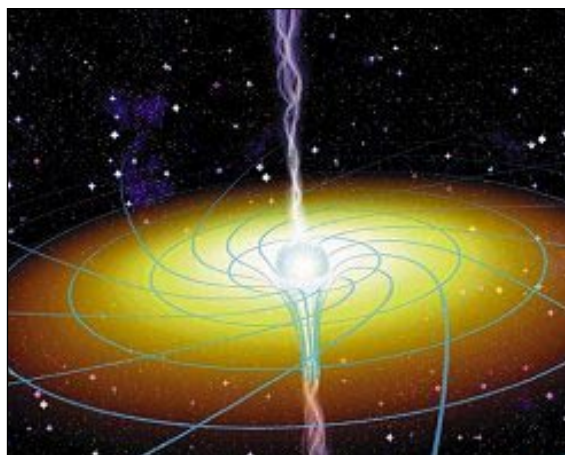
Advancement of Science in Boston.

“Modern laser and magnetic pinch facilities offer new opportunities for pursuing experimental science under extreme conditions of temperature and density,” Remington said. “The potential of this new experimental capability is phenomenal when it comes to applications in astrophysics and planetary physics.”

An understanding of supernovae, the cataclysmic death of a massive star, relies on an understanding of macroscopic matter under extreme conditions. Recreating aspects of the dynamics and energetics of supernova explosions has already been achieved on lasers and z-pinch facilities in laboratory experiments, thereby providing direct measurements under relevant and controlled conditions.

Remington said the next generation “mega lasers” — the National Ignition Facility at the Lab and the Laser Mega Joule in France — may be used to experimentally address questions of thermonuclear ignition and rare nuclear reaction measurements that are common occurrences in supernovae.

Supernova remnants (SNRs) are the vestiges of supernovae explosions. These remnants evolve for centuries, producing glowing filamentary structures in the galaxy and are widely believed to produce most of the cosmic rays that irradiate the Earth. Lab experiments can help improve the understanding of several of the mechanisms present in SNRs and can test aspects of the computational models developed to interpret their behavior. Experiments on high-energy density facilities can address uncertainties in remnant evolution such as the radiative hydrodynamics of SNRs. In the future, experiments may be able to address issues of collisionless shocks and particle



J. BERGERON/SKYTELESCOPEMAG

Experiments on Z allow the spectra from accreting black holes to be accurately interpreted.

acceleration (the first step in cosmic ray generation).

Galactic and extragalactic jets present some of the most visually captivating images encountered in modern astronomy. Using lasers and pulsed power facilities, Remington said scientists have already demonstrated how high Mach number hydrodynamic jets and radiatively collapsing jets evolve and interact.

Cold, dense molecular clouds illuminated by bright, young nearby massive stars serve as the stellar incubators of the universe. The radiation on the cloud creates high pressure at the surface by ablation and ram pressure from the stellar wind. Such systems are thought to be “cosmic nurseries” where active star formation takes place. Through lab experiments with large lasers and pulsed power facilities, scientists can recreate the dominant ablation-front hydrodynamics of radiatively driven molecular clouds, the best known example being the Eagle Nebula.

“With driven molecular clouds, the possibili-

ty to form an integrated program of theory, modeling, test-bed laboratory experiments, and astronomical observations is very real,” Remington said. “Such an integrated program would have been undreamed of just a decade ago.”

Scientists have moved one step closer to understanding the immediate vicinity of black holes, where matter is relentlessly swept down a singular gravitational abyss. Astronomers use high-resolution spectroscopy of the X-ray emissions from heated matter as it is tugged down the black hole to simulate conditions close to the black hole. Laboratory scientists have demonstrated on Z-pinch facilities that scaled versions of these accretion disk conditions can be recreated for close-up scrutiny.

As for new planets, experimental techniques are being developed on pulsed power facilities, lasers, gas guns and diamond anvil cells to probe the properties of matter under the relevant extreme conditions of pressure and compression. These laboratory conditions reproduce those of the interiors of terrestrial and giant gas planets, brown dwarfs, low mass stars and the envelopes of white dwarfs.

Gamma-ray bursts — which are detected at a rate of more than one per day from random directions in the sky — have typical burst durations of a few seconds, but exhibit fluctuations as short as a millisecond. Laboratory experiments using ultra-intense, short-pulse lasers offer the most promising means for accessing the relativistic plasma dynamics and directed flow of gamma-ray bursts.

“Lab experiments and computer simulations are helping to identify and understand some of the dominant physics that are taking place in the vast universe that, until now, we’ve only been able to observe from afar from an astronomical viewpoint,” Remington said.

PARADE

Continued from page 1

to hammer, apply crepe paper and streamers and have fun!

Float construction will be held from 9 a.m. to 1 p.m. on Saturday, March 2, in the Visitors Center parking lot. In case of rain, the construction will be moved to March 9.

And that’s just the beginning. Approximately 10 employees will be needed for each parade to ride the float. PAO is taking requests for these

positions on a first come, first serve basis. So if you’ve ever had a hankering to practice your best Rose Parade Queen wave, call Scott Wilson at 3-3125 and put your name on the list for the parade of your choice.

In addition to the float, PAO will be forming the “Nerdy Scientist Drill Team” — a collection of stereotypical scientists in lab coats doing their best drill team moves to music. These volunteers will walk behind the float and perform at various stops along the parade. Think lawnmower brigades and drilling barbecue grill teams of community parades past and you get the idea.

Costumes will be provided. Volunteers for the drill team corps should also contact Scott Wilson to obtain the practice schedule.

“This is a great opportunity for all Lab employees to help kick off the 50th anniversary celebration,” said Susan Houghton, deputy director of Public Affairs. “I know of some wild and crazy employees who are perfect candidates for our nerdy scientist drill team and I think the community will get a kick out of seeing our float and of course, our wonderful drill team talents.”



CLASSIFIED ADS

See complete classified ad listings at
<https://www-ais.llnl.gov/newsline/ads/>

AUTOMOBILES

1993 - Eagle Vision 4 Dr sedan, white, all pwr options, seats 5, large trunk - \$3500/OBO 925-837-6015

1963 - VW Baja Bug, Upgraded engine. New transmission. 12 Volt generator. Runs great. \$1500 925-449-6334

1997 - SVT Mustang Cobra. Black, 9000 miles. Always garaged and covered. \$19,000. 925-373-1827

1996 - GMC Jimmy, 2DR, 4WD, ABS, tilt, cruise, AM/FM/CD, leather, roof rack, privacy glass, 92K, well maintained, \$7500. 925-447-2866

1995 - Honda Accord EX black, leather, moonroof, AC/CC/PW/PL 149K miles. Excellent condition. \$7,400. 209-834-1340

1989 - Ford Ranger, Supercab 4X4,XLT Trim,AT,AC,limited slip,alloy wheels, cassette, shell, flow master, one owner, excellent condition \$5250.00 925-846-2843

1990 - Mitsubishi Eclipse, turbo,clean,PS,AC,80,000 miles on rebuilt engine,new custom tires and rims,spoiler,custom racing clutch,\$4,000 obo. 925-687-4590

1985 - Honda Accord. Looks ugly but runs EXCELLENT. Power everything. Dependable, perfect commuter car!! \$650 209-656-7337

1995 - Ford Explorer 4 x 2. Excellent condition. Always kept it serviced. New Tires. All power. Asking Blue price \$6,800.00 OBO 510-537-7222

1989 - Honda Civic 4 door. AT/AC, power windows and locks, stereo. New tires, brakes, alt & battery. 120K miles. Good condition. \$2900. 209-834-1801

1990 - 2.2L 4CYL, AUTO,P/S,P/B, A/C, 136,000 MILES, runs good,\$800 O.B.O 925-513-1709

1996 - Acura Integra LS, 2dr hatchback,77k mi.,silver, cruise,moonroof,CD,excellent condition,great commuter car. \$9,800 OBO. 415-518-5114

2001 - Mitsubishi Eclipse GT, Leather, fully loaded, spoiler, tinted windows, 5 speed, 15,500 miles. Excellent condition. \$1950/BO 925-373-4791

1953 - Studebaker Roadster - frame, engine, tranny etc.. with DeLawri Coachcraft Fiberglass body on top. Make offer 925-449-5626

1974 - Scout II 4x4 w/winch, at, locking rear, clean body and interior, not running. \$1200.00 OBO 925-449-5626

1973 - VW bus, Smog exempt, type IV motor, new carb, new brakes from hose to hub. \$2950.00 or best offer. 209-239-5625

1994 - Honda Civic si 94, 80kmiles, custom rims, suspension, intake, exhaust, color, pedals etc. Very noisy - not a commute car! 4000\$ 925-455-8613

1991 - Ford Explorer XLT 4x4.130Kmi,SecuritySystem, Silver/Black, A/T,A/C, PwrSteer, PwrWin, MoonRoof, AM/FM/Cassette, \$4750/obo 925-447-0083

Ford Probe, 1991, rebuilt transmission, 4 new tires, runs good, 122K miles, needs some body work \$1500 408-945-0250

AUTOMOBILE ACCESSORIES

Roll bar for full size pickup - \$50 obo 925-443-5565

(4) Brand New Ford Super Duty Truck Premium Wheels on LT265/75RX16E BSW All-Season Tires. \$750 or B.O. 925-455-4041

Need a set of trim rims size 14 209-531-1527

Volvo third seat for 200-series wagons. Tan, without any damage. \$150/BO. 925-484-1319

Smittybilt Rollbar from 1966 Jeep CJ-5, good condition, asking \$40 obo 925-455-1959

Four NEW Suburban tires with rims; Goodyear Wrangler RT/S P245/75 R16. Call for price. 925-960-0239

Parts for 87 Sterling 825 SL, V6-Engine/transmission, doors, fenders, oil filers, many more parts. 510-582-1494

4 Toyota 4X4 Factory Alloy Wheels. 15X7 inch wheels with 30X9.50 Goodyear Wrangler GSA tires mounted. Only 10,000 miles on tires. \$300.00 OBO 925-449-8009

BICYCLES

1996 scooter w/canopy for the physically challenged. Great condition \$900 OBO 925-456-6720

Bicycle headlight, dual beam NiteRider, mounts on bars with battery in drinkholder. Has high-low switch. Very bright, asking \$110, new price \$260 925-484-4099

BMX Free Agent Raceway Bike sealed bearings Chromoly frame 3 piece crank extras \$300 near new condition 209-835-2416

20 inch BMX style bike. Green Cami color scheme. Like new condition. \$50. 650-364-5951

BOATS

1995 Ski Sanger new Ski Tower,looks and runs like new. Asking 16,000 or B.O. 209-632-4568

Propeller, stainless, variable pitch for Merc outdrive. 925-447-8804

ELECTRONIC EQUIPMENT

PC and Color Printer. Win95,

133mhz, 28MBRAM, 540MBHD, CD-ROM and 3.5 floppy, video card, 56k modem. Exc cond, great for student/home. \$395/BO. 209-295-7007

Flatbed scanner to PC or Mac + software + SCSI cable. (Will work to a PC with a parallel cable.) \$50 925-784-8934

Turbotax 2001 Premium and Turbotax 2001 for CA CDROMS. Both for \$35. 925-292-7799

Computer hardware - 40X IDE CD ROM Drive & 56K dual mode zoom/fax modem for Windows 95,98 or NT (New in box) \$25.00 each 209-599-1955

Alcatel 1000 DSL Modem, used with PacBell DSL (Earthlink, DirectTv DSL, etc). Used, good shape. \$25 925-918-2065

Optics Bread Board\$100;Surface Dial Indicator 0.1Micron Resolution \$75; Gas Chromatograph \$150;; Vacuum Pump/ Bell Jar\$75; GloveBox \$150;more 925-449-2008

GIVEAWAY

Whirlpool 30 inch drop-in style gas oven/range, black and stainless steel, in good condition. You carry it away. Call evenings. 209-472-1839

Weight set, 65 lbs total. 925-484-1319

Wooden bathroom vanities 1-30x22 & 1-60x22, one piece onyx counter top 30x22 w/ sink & faucet, white oval sink & faucet, both faucets work fine. 925-829-7786

Dark oak table with 4 bruer style chairs. 30 inches x 60 inches. 925-447-2224

Free standing dishwasher and dryer. Both work well. Free to a good home. 925-449-3663

Beautiful,friendly 8 year old grey cat in excellent health. We have an allergy problem. Will provide child support! 650-838-9451

HOUSEHOLD

Dryer Kenmore, electric, almond good clean condition, \$95 925-443-5565

Garage sale - miscellaneous items Sat. and Sun., Feb. 23, 24, 8:00 am - 5:00 pm 491 Swan Drive, Livermore 925-443-4724

General Electric Super Capacity Washer and Dryer. Washer 8 cycle, 2 speed, White, Sell as a Set, Excellent Condition, 2 Years Old, \$450.00 209-836-5596

Antique Belgian Armoire, circa 1890, 3 door,2 drawers, 2 shelves, closet section, 20dx72hx60w \$945 925-449-9038

Antique walnut dresser, 4ftx3ftx22in, needs touch-ups, \$95. 1920s chaise lounge with skirt, newer lt blue

upholstery, great cond., \$135. 925-516-2774

FREEZER, chest style, Mont. Wards, 8.4 cu ft, great cond. Moving, must sell! \$100 925-980-3121

12 place settings Noritake dinnerware, like new cond. includes serving dishes. \$300 925-989-6199

BOOKCASES - natl oak 54in t/48in w \$100; med oak 37in t/48in w \$100; natl pine 36in t/37 in w \$40. 925-371-0783

King bdrm, 2 nightstands, 2 dressers, mirror. \$1250.00/obo. Dining set, table w/3 leaves, pads. 6 chairs, buffet & china cabinet. \$1250.00/obo 925-443-1539

Corner group sofa 3 pcs. very nice condition. Also, pine coffee table and matching end table/cabinet. All pcs. work well together. \$400.00 for all. 925-449-8009

LOST & FOUND

FOUND on 2/6/02 in B132N first floor womens restroom - insulated lunch bag. 925-829-2848

Found: Woman's bracelet, found Tuesday, Feb. 5, Bldg. 517. Describe to claim. 2-3484.

LLNL 15-year pin was found in Bldg 482, Conference room 2304, last week. To claim it, please call 3-8308, or rymal1@llnl.gov.

MISCELLANEOUS

Arc welder 220 volt/135 amp. \$50. 925-245-4570

SALSA DANCE SHOES (7 1/2): New, Werner Kerns, style (Sylvia), \$100 or BO. Almost new, Freed of London, style (Roma), \$80 or BO. Tote bags incl. 209-529-1809

Jogging Stroller - good condition. \$75.00 209-825-5139

1946, C-140, excellent air-frame, Sensenich Prop. Cam failed, needs overhaul. Pd \$21K, make offer. 209-736-2526

Sears heavyduty sander (\$60), scroll saw (\$60), electricians prof AC multimeter (\$75) or offers 925-292-7799

New aluminum White frame/white grids windows. 7-5ft X 5ft Sliders; 4-3ft X 5ft Single Hung; 1-4ft X 5ft Fixed. \$75. to \$100. or all for \$1,000. 925-443-8795

AVITA 850 rowing machine with exercise manual, excellent cont.\$50 obo 925-455-1959

Kirby vacuum/attach. Three yrs. old, hardly used. \$500.00/obo. Walnut table with burl inlay. Round, 44in diameter, w/4 leaves. \$850.00/obo. 925-443-1539

Work Benches w/Risers \$75ea;Chairs w/Castors\$20ea; Silk Screens/Access \$200; 19in Racks w/Shelves/Drawers \$50ea; Granite Surface Plate\$150;more 925-449-2008

Craftsman welder \$50, Craftsman Bandsaw \$100, Portable sand blaster \$25, big rear wheel Lawnmower \$65 209-239-5625

Thousand Trails-MACO camping membership, 50 nights free camping. Membership cost plus transfer fee. 209-874-3438

1999 John Deere 4300 w/loader and drag box low hours. \$ 15,000 209-847-8264

MOTORCYCLES

2002 - Yamaha TTR125. Perfect dirt bike for the novice to intermediate rider. Only ridden three times. Showroom condition, brand new. Must sell! \$2,650 209-656-7337

MUSIC INSTRUMENTS

Suzuki violin, 1/4 size, Wolf violin headrest (1/2 size), Violin Strings, all like new. Make offer 925-292-7799

1900 Shoninger upright piano. Great for student. \$800. 925-447-3856

PETS & SUPPLIES

Dog Crate/Pet carrier. Approx 3 ft long, 2 ft wide. Excellent condition. Great for house-raing puppies and small dogs. 925-829-3226

Grey Cockatiel, talks, w/cage, \$35; Zebra Finches w/cage, \$40. 925-443-2388

UMBRELLA COCKATOO friendly, tame, needs a new home,preferably with other feathered friends! Comes with 2 cages, toys, food. \$1000. 510-834-6405

Akita Puppies, Health guarantees, 4 boys 1 girl. Champion lines. Avail. Feb 9th. \$500.00, Show kennel-v 925-449-5626

White dwarf bunny, with cage and toys. \$30 209-833-6443

Corgie mix, red long hair female dog, approximately 2 yrs old, moving unable to keep, free to good home 925-373-3845

50 gallon plexiglass terrarium. Good for reptiles. Includes overhead florescent light. \$15. 925-443-4778

AquaClear aquarium filter. Ideal for 30-50 gallon tanks. \$10. 925-245-4570

Horse for sponsor in Oakley.\$75.00 Per. Mo. 16H thoroughbred very sweet, Rides English/WEST 19 yr. old glending, rider has shown in 4H , 925-687-7356

Large Dog Cage new. Purchased for \$110 selling for \$65 925-449-3821

RECREATION EQUIPMENT

ee carbide sizer die for 45 ACP. Never used. \$15. 925-245-4570

Swim Coat. DuWest Green with Gold. LHS on back. \$40 209-835-5031

Web-based LTRAIN questionnaire available for use

The Laboratory Training Manager’s Office (LTMO) has rolled out a fully Web-based version of the Livermore Training Records and Information Network (LTRAIN) Questionnaire. The LTRAIN e-Questionnaire, located at https://www-ais.llnl.gov/llnl_only/docs/hr/ltrain/, provides greater convenience and accuracy in determining training requirements.

The LTRAIN e-Questionnaire is available Labwide, and all organizations can benefit from the many advantages over the questionnaire’s predecessor, such as enabling employees to complete their own questionnaires online, facilitating communication between supervisors and employees, and allowing supervisors to review questionnaires prior to approval.

The LTRAIN e-Questionnaire is the starting point for all required employee training at LLNL. Completed when an employee is first hired and updated annually or when an employee changes assignments, this document is used to determine the various training that an employee must complete.

The LTRAIN e-Questionnaire is filled out by employees and approved by supervisors using a standard Web browser, such as Netscape and Internet Explorer. Because information is entered online and input directly into the LTRAIN database, there is no need to send electronic documents as e-mail attachments or work with paper documents. This improves the speed, efficiency and accuracy of the entire process.

Both employees and supervisors can initiate the process. An employee can, when instructed by his or her supervisor, log on to the LTRAIN Website to complete a questionnaire, then click the “release to super-

The Livermore Training Records and Information Network (LTRAIN) e-Questionnaire is available Labwide on the Web, located at https://www-ais.llnl.gov/llnl_only/docs/hr/ltrain/. The questionnaire is the starting point for all employee training at the Lab.

visor” button. An e-mail is automatically generated to inform the supervisor that the questionnaire is ready for review. This e-mail also contains a hyperlink that supervisors can click to go directly to the LTRAIN e-Questionnaire. Alternatively, the supervisor can fill out the employee’s questionnaire and have the employee review it.

As before, the questionnaire consists of 32 top-level items and numerous sub-level items.

An important benefit of the Web-based questionnaire is that answering “no” to a top-level question automatically hides all sub-level questions below it. This prevents employees from accidentally answering “Yes” to an inapplicable question and eliminates the need for supervisors to manually delete those portions during the approval process.

Access restrictions assure data integrity: The LTRAIN e-Questionnaire can be accessed only by the employee, his or her payroll supervisor, and payroll LTRAIN contacts.

With enhanced power, speed and accuracy, the LTRAIN e-Questionnaire benefits both employees and their supervisors. (The new Web-based form was reviewed with directorate training representatives before implementation.)

Consult your organization’s LTRAIN contact if you have questions about e-Questionnaire

(including whether your organization has decided to adopt e-Questionnaire) or any other LTRAIN-related matter. Need help finding your LTRAIN contact? Go to the LTRAIN home page (<http://ltrain.llnl.gov>), then click on “contacts,” near the top of the page.

For additional LTRAIN resources, call the LTRAIN hotline at 4-5475 or the LTRAIN administrator at 2-9653.

Discount ski lift tickets for sale. Two vouchers for Heavenly. \$40 each (\$17 off regular price). Vouchers good thru April 30, 2002. 510-733-6972

Tunturi exercycle, low mileage. \$350 new, asking \$100. 925-443-1969

2 Bally Fitness memberships. \$200 each. Monthly dues \$9 per month. 925-479-0958

AB Doer II, ab workout machine with workout tape and original shipping box, new cond., paid \$100 new, asking \$80 obo 925-455-1959

RIDESHARING

Express your commute, call 2-RIDE for more information or visit <http://www-r.llnl.gov/tsmp>

San Jose - Looking for carpool partner from San Jose-South Bay area. 408-578-8480, ext. 2-8061

Modesto - Vanpool seat available. 7:45 - 4:30. Captain chairs/reclining, reading lights. Can help drive to reduce rate plus pretax transit program. 209-521-9047, ext. 2-5177

PATTERSON - Vanpool has seats available. Work hours 7:30-4:00. 209-892-2118, ext. 2-9502

DANVILLE - Camino Tassajara & Crew canyon (near Blackhawk) - 2 drivers/riders seeking additional members to carpool from south Danville area. 8:00 - 4:45 925-736-9441, ext. 2-1039

SERVICES

Tree Trimming Service. 925-292-4751

TUTORING in high school and college math and chemistry. 925-443-2095

Hauling Service. Estate Cleanouts, Attics, Garage, Shed and Barns. Misc... 925-373-9540

SHARED HOUSING

Livermore - 3 bdrm house, private bath, clean, no smokers/pets please, \$525 mo. + 1/2 utilities 925-371-5587

Livermore - Room \$550, 1 Acre,next to Vineyards,Spa,Bike to lab, Internet,digital Cable, Kitchen and laundry privileges 925-373-2910

TRUCKS & TRAILERS

1997 - Toyota - Tacoma pickup. 4 cylinder w/ auto transmission, p/s, am/fm, and toolbox. 68,000 miles, runs great. Asking \$7600 925-829-4946

1989 - k2500 RED Ext cab. 3/4 ton 4x4 HD radiator & trans. Fender flares, custom rims. lots of compliments. Great condition \$6300 209-239-2456

1999 - 1500 Ram SLT Quad Cab,Tow Package,looks and runs brand new 33k miles. 17,000 or best offer. 209-632-4568

1997 - white Expedition 4X2, 68K miles, Amer. Racing wheels, mint cond. \$15,000 OBO. 925-462-2817

2000 - Ford F150 Truck, White/ Fully Loaded, Excellent condition. 13,000 miles. \$23,900 925-449-1509

1986 - Ford F250 HD Ext cab 4x4 Long bed 460 V8 4 spd + OD. 71K miles. Sprayed bed liner. Custom rims. Fifth wheel hitch & receiver incl. \$5000. 925-484-3686

1996 - Nomad 27ft 5th Wheel w/13ft slide out. Very good cond - has everything! \$15,500 obo. 209-847-8264

1992 - Ford F250 Supercab 7.3L Diesel 170K Mi, many new things \$6000.00 209-847-8264

VACATION RENTALS

Lahaina, Maui, HI - Dec. 4-11, 2002, 2 Bedroom Condo

available. \$875 for week. 925-449-6048

HAENA, KAUAI - - Private house and/or studio on the scenic north coast near Hanalei Bay - this is the real Hawaii! House-\$125/day, studio-\$75/day. 831-479-3441

SOUTH LAKE TAHOE - 3 Bedroom 2 bath Chalet, newly remodeled, nicely furnished,all amenities,close to all skiing, Reserve Now! 209-599-4644

SEA RANCH - Oceanview home. No smoking. No pets. Adults only. 2BR(KQ)/2BA 1700sqft. Hike. Bike. Whale watch. Kayak. Swim. Tide pool. H 925-443-5086

WANTED

Used binoculars size 12X50 or 15X50 in good condition. 209-531-1527

Friends to ride dirt bikes and camp. Couples and singles welcome. Weekends & Summers. Furnish own equip. No exp necessary. 925-443-3283

Crochet thread for tying quilts for charity project. 20 or 30 weight, any color. Call Sandi 925-462-1548

Recumbant exerise bike for disabled person. Slightly

used. 510-537-7222

Wanted - old gasoline pumps (1940-1950s) and used Schwinn string ray banana seat bicycles(1970s). 925-846-1661

Wanted: skis for beginning and advanced skiers. Around 150 cm and 195 cm. 925-454-3396

Very old salvaged lumber from old buildings or furniture. Looking for fir or pine in wide and/or thick boards. Weathered ok. 925-455-5655

Looking for sturdy drafting table for home use. 925-373-1512

Starving student needs to borrow, beg, or steal a copy of AutoCad 2000 or greater. Please help out. Thank you! 510-791-8623

Looking for auditioners to sing the National Anthem at 2002 Livermore Rodeo, 6/8-9. Auditions 3/30. 925-449-0865

A Cannon AE-1 Camera For H.S. student photo class 209-521-4846

Someone recently ran an ad about a dog for giveaway. Maltese/Yorkie. Your phone number was wrong. Please run the ad again.

RATINGS

Continued from page 1

process covered under Appendix F was first added to the UC/DOE contract in 1992. The UC labs were the first within the DOE complex to implement PBM with its focus on self-assessment, peer review and performance results rather than audit and compliance. PBM has since been embraced as a DOE-wide policy and is utilized throughout the contractor community.

The Lab management category is an overarching assessment of the Director’s Office that covers strategic planning, establishing and communicating performance expectations, internal and external communications, asset and infrastructure management, accountability and commitment, and community relations. The NNSA rating for Lab management increased from a high “excellent” last year to “outstanding” this year. The NNSA lauded LLNL management for the significant progress made on the National Ignition Facility, scientific accomplishments in support of our NNSA missions, effective communications with NNSA/DOE, enhancements to safeguards and security operations, continued improvements in Integrated Safety Management, and an effective community relations programs.

Laboratory S&T received an overall rating of “outstanding,” an increase from last year’s high “excellent.” Each scientific directorate’s S&T assessment is comprised of a self-assessment, peer reviews conducted by directorate review committees, an annual assessment prepared by the UC President’s Council on the National Laboratories, and validation and rating by DOE/NNSA program managers.

“This year’s scores reflect the critical role the Lab continues to play in the changing demands of national security,” said Jeff Wadsworth, deputy director for Science & Technology. “We continue to prove ourselves as a world leader in science and technology, with the highest standards in operations and management as well. Every single employee contributed to these outcomes, and we can all be proud of what the Lab has achieved.”

Wadsworth added that recognition for NNSA-related missions was particularly satisfying, as it was a major focus of Lab goals for the year. According to John Gilpin, director of Contract Management, the score for O&A is the highest since the rating system went into effect under terms of the performance-based UC/DOE contract in 1992.

“This is the first year we’ve gotten ‘outstanding’ ratings on both sides of the house. Our scores were

DOE/LLNL Appendix F ratings: FY01		
	Rating	Percentage
Science & Technology		
Directed Stockpile Work	Excellent	87.5
Campaigns	Outstanding	94.9
Readiness in the Technical Base & Facilities	Outstanding	99.4
National Ignition Facility	Outstanding	96.4
Non-Nuclear Proliferation	Outstanding	93.6
Other	Outstanding	92.8
Total Science & Technology		
	Outstanding	93.8
Laboratory Management		
	Outstanding	91.1
Operations & Administration		
Environment Restoration & Waste Management	Outstanding	92.9
Environment, Safety & Health	Excellent	80.5
Project/Facilities/Construction Mgmt.	Outstanding	92.8
Safeguards & Security	Outstanding	94.8
Financial Management	Outstanding	98.7
Human Resources	Outstanding	91.1
Information Management	Outstanding	92.3
Procurement	Outstanding	93.4
Property Management	Outstanding	95.0
Total Operations & Administration		
	Outstanding	90.5

good last year, but they’re even better now,” said Gilpin. “This demonstrates the professionalism and commitment of all employees and managers to accomplishing missions and achieving long-term performance improvement.”

Gilpin said the scores also reflect an excellent working partnership with the UC and DOE, helping to identify O&A management priorities and desired outcomes, and ultimately, enhance performance and operational effectiveness.

This NNSA “outstanding” performance rating under the annual Appendix F evaluation follows on the heels of a positive “pass” rating of the UC labs (Livermore and Los Alamos) in the first one of two annual reviews under Appendix O of the UC/DOE contract.

Appendix O was added to the contract with the January 2001 modification. It includes five new program performance initiatives that require UC to demonstrate improved management oversight of the labs and for the labs to improve performance in management accountability; safeguards and security management;

facilities safety; critical skills, knowledge and technical capabilities; and project management and construction project management. For several initiatives, UC was required by DOE to retain subcontractors to assist in the work, providing an outside assessment of work at the labs and identifying opportunities for improvement.

With a two-year timeline for performance improvement, Appendix O has the highest management attention at NNSA, UC and the labs. The UC labs’ performance success against the Appendix O initiatives is assessed by NNSA on a “pass/fail” basis for the five initiatives in FY2001 and 2002. The FY2001 rating by NNSA, completed in October 2001, was “pass” for all five initiatives. Appendix O is proceeding on track for FY2002, and the next performance review with senior management will be held this month. UC and the Labs are working with NNSA to bring Appendix O to successful closure and to streamline the Appendix F process for FY2003.

For the full report with contract, see the Website at [http://www-r.llnl.gov/OCM/FY01_ AppF/OAK _AppF_2001.pdf](http://www-r.llnl.gov/OCM/FY01_AppF/OAK_AppF_2001.pdf).

TECHNOLOGY

Continued from page 1

could be projected to last more than 300 percent longer, extending standby time from four days to two weeks, and talk time from six hours to two days.

The miniature fuel cell technology incorporates a thin-film fuel cell and microfluidic fuel-processing components integrated into a common package. Using easy-to-store liquid fuels, such as methanol, the fuel cell power module provides greater than three times longer operating time than present rechargeable batteries.

“LLNL’s fuel cell can be cheaper, smaller, with more energy capacity than any battery or alternative fuel cell technology,” said Jeff Morse, principle investigator on the fuel cell project.

“Additionally, the higher energy capacity of such a product will lead to further new classes of personal electronics,” Morse explained, “such as autonomous sensors and communication devices that are not currently possible with existing battery technologies. This will facilitate the integration of voice, data and computing technologies that cannot be achieved with today’s technologies.”

The patented design and method for making thin-film fuel cells combines microcircuit processes, microfluidic components, and micro-electrical-mechanical systems (MEMS) technology. This solution provides the consumer a lighter-weight, longer-lasting power source for replacement of existing rechargeable batteries.

Morse predicts the MEMS-based fuel-cell power source will replace rechargeable batteries, such as lithium-ion and lithium-ion polymer, in a range of

consumer electronics, including cell phones, handheld computers and laptops. The MEMS fuel cell is designed to be 50 percent of the cost with 30 percent of the weight, size or volume of existing rechargeable portable power sources.

“The MEMS-based fuel cell has been designed to compete with existing re-chargeable batteries in their respective marketplaces,” said Morse. Current estimates suggest a price of \$1.50-\$3 per watt-hour.

LLNL’s miniature fuel cell product incorporates integrated microfluidic fuel distribution architecture within a miniature fuel cell package. This feature enables the fuel cell to operate from highly concentrated methyl alcohol fuel mixtures supplied from a replaceable fuel cartridge.

The impact to the consumer will be greater than three times longer periods between recharging for initial products, with foreseeable improvements of up to 15 times longer. Furthermore, recharging is instantaneous by simply plugging in a new fuel cartridge.

The heart of this miniature power source utilizes a thin layer of electrolyte material sandwiched between electrode materials containing appropriately proportioned catalyst materials. Microfluidic control elements distribute methyl alcohol fuel mixtures through a silicon chip over one electrode surface while air is simultaneously distributed over the other electrode. Integrated resistive heaters allow heating of the electrolyte-electrode layers, thereby increasing the conduction of catalytically generated protons from the fuel supply across the electrolyte to the air breathing electrode, where they combine with oxygen to generate electrical current. Optimization of current output through control of the catalyst and electrode surface area, and microfluidic fuel distribution, offer a miniature energy source providing continuous power for

greater than three times longer than existing rechargeable batteries.

The miniature fuel cell power source will find applications in the complete range of consumer electronics as a replacement for rechargeable batteries. These include cell phones, personal digital assistants, laptops and other portable electronics.

Other applications include military electronics and sensors for remote and autonomous application in which extremely long lasting power is required.



Newsline
UC-LLNL
PO Box 808, L-797
Livermore, CA 94551-0808